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ABSTRACT

Two studies of influences on self-regulated performance were conducted. The purpose of the first was to determine if the level of performance of college students would be higher if the allowable length of the assignment was greater or smaller. Subjects were 126 education majors at a large state university participating in an extra-credit program called the Voluntary Homework System (VHS) as part of a course in educational psychology. The maximum number of test items prepared for extra credit that could be submitted each week was set at 100 for one group and 25 for a second group. Students gave self reports of their own competence. Analysis of variance indicated that length limit and perceived self-competence level affected performance, with a significantly lower level of performance produced by the 100-item limit. In a second study, 63 students from the same course had a 25-item length limit and were graded according to preset criteria of 300 points for a single bonus and 450 points for a double bonus. Other aspects of the VHS were identical. The grading criteria tended to affect performance differently for the different self-competence levels. Its overall impact was not great, but students low in perceived self-competence tended to receive the greatest motivational boost. Implications for instruction are discussed. Four tables present study data. (SLD)

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Motivating Student Performance: The Influence of Grading Criteria and Assignment Length Limit*

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Student motivation is an important influence on teaching and learning outcomes in college instruction. In contrast to the high school experience, college requires students to exercise far greater control over their own learning and performance if they are to succeed. Tuckman and Sexton (1989, 1990) have identified the magnitude of performance, called *self-regulated performance*, as an indication of motivation because it represents the amount of effort students are willing to apply to their assignments and school responsibilities. Since students are not able to modify their ability levels in the short term, effort becomes the prime causal attribute to modify if outcomes are to be successful (Weiner, 1980).

While self-regulated performance or performance effort is largely a student responsibility, various external factors have been shown to affect it. These factors, however, often tend to vary as a function of the student's self-beliefs in his or her competence to perform. Informational feedback, for example, tends to enhance self-regulated performance, but primarily among persons who believe themselves to be average in self-competence (Tuckman and Sexton, 1989). Working in groups also appears to enhance the performance of this average group while engaging in goal-setting seems to motivate those low in perceived self-competence (Tuckman, 1990). Students who are high in perceived self-competence seem best off when left to their own devices (Tuckman and Sexton, 1989;

Tuckman, 1990).

It is possible that two very mundane variables, both under the control of the instructor, may influence self-regulated performance, perhaps even differentially for students who differ in perceived self-competence. One variable is the manner of grading or evaluating performance, either on a relative basis or "curve," as compared to using preset, absolute criteria. The other variable is the allowable length of the assignment, or outer limit, be it either long or short. It is possible that the uncertainty of relative scoring and the overwhelmingness of long assignment limits may be intimidating to students whose perceived self-competence is low and, hence, inhibit the magnitude of their performance (Bandura, 1977, 1986).

Consequently, two studies were conducted. The purpose of the first study was to determine if college students would perform more if the length limit of the assignment was great in contrast to if it were small. The purpose of the second study was to determine if students would perform more if their performance was evaluated on a relative or normative basis, as in a competitive situation, in contrast to an absolute or criterion basis, as in an individualistic or mastery situation.

STUDY I

Methods. Ss were 126 junior and senior teacher education majors in a

large state university. The majority were female and the mean age was 21. All were enrolled in two sections of a required course in Educational Psychology given at the same time but on different days. The course covered the topics of test construction and learning theory. Included in the course was a procedure for allowing students to earn extra credit toward their final grade called the Voluntary Homework System or VHS (Tuckman and Sexton, 1990; Tuckman, 1990). Ss were given the opportunity to write test items on work covered in that week's instruction with completion items worth one point each, multiple-choice knowledge items two points each, and multiple-choice comprehension items worth three points each. Point values reflected the amount of effort required to write each type of item. Items were loosely screened and, where needed, were returned for correction. VHS extended over 10 weeks of a 15 week course and the points earned each week were cumulative.

To help motivate performance on VHS in each of the two classes, double grade bonuses were awarded to the top third point scorers (e.g., a C becomes a B-), single bonuses to the middle third (e.g., a C becomes a C+), and no bonuses to the bottom third - regardless of how many items they wrote. This is called NORM-REFERENCED GRADING, and was a constant across both groups in this study.

The independent variable in Study I was the upper limit or maximum

number of items which could be submitted each week. For one group, the upper limit or maximum was 100 items (HIGH LIMIT), while for the other group, the upper item limit was 25 items (LOW LIMIT).

At the start of each week, Ss were asked the number of test items they felt capable of writing that week, and how confident they were in that estimate, on a 1-9 scale. The product of estimated items and confidence was taken as a measure of perceived self-competence. The weekly measure of self-competence, averaged across the first two weeks, was used for classifying Ss into high, middle, and low perceived self-competence. A correlation of .80 was obtained between week 1 and week 2 self-competence scores, indicating the reliability of the measure.

Ss were also asked how important it was for them to obtain a bonus (on a 1-9 scale). The measures obtained at the start of week 1, before any performance took place, on perceived self-competence and outcome importance were used to establish the intitial equivalence of the two groups. This demonstration of adequate control for selection bias was necessary to justify the appropriate use of a quasi-experimental design (Tuckman, 1988). Moreover, each class was of approximately equal size, met at the same time of day, and was taught the same material in the same way by the same instructor. The classes did not differ in age or gender distribution.

Results. Initial self-competence means for the two groups were 370 and 375 respectively (F=0.03). Initial outcome importance means for the two groups were 8.0 and 8.1 (F=0.01). Hence, the two classes did not differ initially on either perceived self-competence or outcome importance.

The results of a 2x3 analysis of variance of total performance points by item limit and perceived self-competence is shown in Table 1. Means and standard deviations on total points earned for Ss of high, medium, and low perceived self-competence in the group with the HIGH LIMIT of items and the group with the LOW LIMIT of items are shown in Table 2.

The main effect for assignment length yielded the following results: (1) for condition, F=3.08, df=1/120, p<.05; (2) for self competence level, F=4.26, df=2/120, p<.01; (3) for the interaction, F=1.24, df=2/120, p>.10. Paradoxically, Ss in the group with the lower limit earned significantly more points than Ss in the group with the higher limit (231 versus 180). This difference was based primarily on the greater performance by Ss of medium and high self-competence. Ss of low perceived self-competence seemed relatively unaffected by length limit, performing equally little in both conditions.

STUDY II

Methods. A third group of 63 Ss, taking the same course at the same

time of day but during the semester following the two in Study I was used in the second study. This third group was compared to the group in the first study that had the item writing limit of 25 (the lower limit). The course covered the same content, was taught by the same instructor, and included students of similar age and gender distribution to the two used in the first study.

The difference between the operation of the Voluntary Homework System (VHS) in study two and in study one was that in study two preset criteria were used for determining grade bonuses and were announced to students at the beginning of the 10 week period. Two obtain a single bonus, 300 points were required while a double bonus required 450 points. Any number of students could obtain each bonus. This method of using preset performance criteria was called CRITERION-REFERENCED evaluation and was compared to the method of using relative performance criteria (top third/middle third/low third) or NORM-REFERENCED evaluation of study one. Since the length limit for the new group was 25 items, its performance was compared to that of the group in the first study with the low (25 item) performance limit. All other aspects of VHS were identical for the two groups.

Results. A comparison of this third class to the second in study one on initial self-competence revealed no difference (means of 368 and 375

respectively, F=0.05). No difference was obtained as well on outcome importance (means of 7.9 and 8.1 respectively, F=0.10). Hence, the classes to be compared were considered to be of initial equivalence.

The results of a 2x3 analysis of variance of total performance points by type of evaluation criterion and perceived self-competence is shown in Table 1. Means and standard deviations on total points earned for Ss of high, medium, and low perceived self-competence in the group with the NORM-REFERENCED evaluation criteria and the group with the CRITERION-REFERENCED evaluation criteria are shown in Table 2.

The ANOVA for grading criteria yielded the following results: (1) for condition, F=0.51, df=1/120, p>.10; (2) for self competence level, F=4.43, df=2/120, p<.01; (3) for the interaction, F=2.20, df=2/120, p<.10. While Ss in the two groups performed about the same, regardless of grading criterion, a differential effect of grading criterion (that approached significance) was obtained for the different self-competence groups. The two types of grading criteria had exactly opposite effects on the medium and low self-competence groups (while having no effect on the high self-competence group). Ss in the medium group earned 52 more points with the normative than with the preset criterion approach while Ss in the low group earned 97 more points with the preset criterion approach than with the normative approach.

DISCUSSION

The results indicated that length limit and perceived self-competence level each affected performance, and that grading criterion tended to affect performance differently for the different self-competence levels. The100-item length limit produced significantly less performance than the 25-item length limit; hence, increasing the length limit of an assignment paradoxically resulted in less student performance rather than more, particularly for students of medium and high self-competence.

It was also concluded that, overall, grading criterion did not make a substantial difference in performance. However, this conclusion seemed to have been moderated by student level of perceived self-competence. In general, the more a student viewed him or herself as competent, the more he or she performed, regardless of conditions. But those students low in perceived self-competence appeared to receive the greatest motivational boost from the criterion-referenced grading system. In other words, students who lacked confidence in their own ability were most inclined to expend effort when the criteria for evaluating their performance were preset, known in advance, and unchanging, thereby removing any sense of uncertainty as to the likelihood of obtaining a payoff for effort expended.

By comparison, students of middle or average self-competence did best when relative criteria were used for evaluating their performance.

This may have occurred because there was so little tendency for the low performers to perform in the relative (and perhaps threatening) grading system that the cutoff score for getting a single bonus turned out to be relatively low. Thus, moderate performers could gain this bonus without performing excessively. In fact, in the N-R grading, the cutoff between no bonus and a single bonus ended up being 79 points in comparison to the 300 point preset criterion in the C-R grading condition.

The findings on grading criteria are remarkably consistent with past findings on other external variables as they affect students at the three different self-competence levels. As in past studies, those students who view themselves as competent seem least affected by performance conditions. These students appear to be "internally programmed" to regulate their own performance and do so under a variety of conditions (Bandura, 1986). However, this was not true for length limit where the shorter limit enhanced the performance of even highly self-competent students. Teachers, therefore, need not worry as much about helping or hindering this group except for keeping their assignments short.

However, those of middle perceived competence and those of low perceived competence are both affected by external conditions, yet very differently. Those low in self-competence appear to require great structure and certainty regarding the payoff value of their performance

before they will perform while those of middle or average self-competence seem to be most motivated by relativity and the involvement of other people. Instructors, therefore, are encouraged to provide as many alternatives as possible in performance conditions so that students can select those with which they are most comfortable.

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Table 1

ANOVA of Performance Points by Length Limit Condition and Self-Competence Level

Source	df	MS	F
Condition	1	60987	3.08*
Self-Comp	2	85197	4.26**
CxS	2	24757	1.24
Error	180	20012	

*p<.05, **p<.01

Table 2

Means and *Standard Deviations* for length conditions: HIGH LIMIT and LOW LIMIT and Self-Competence Levels: HIGH, MEDIUM, and LOW

	HIGH LIM	LOW LIM
High S-C	217 *(163)*	289 *(160)*
Mid S-C	165 *(152)*	258 *(150)*
Low S-C	154 *(148)*	141 *(139)*
Combined	180 *(155)*	231 *(176)*

Table 3

ANOVA of Performance Points by Grading Condition

and Self-Competence Level

Source	df	MS	F
Condition	1	704	0.51
Self-Comp	2	6095	4.43**
CxS	2	2777	2.20^
Error	180	1375	

*p<.05, **p<.01, ^p<.10

Table 4

Means and *Standard Deviations* for grading conditions:

NORM-REFERENCED (N-R) and CRITERION-REFERENCED (C-R)

and Self-Competence Levels: HIGH, MEDIUM, and LOW

	N-R	C-R
High S-C	289 *(160)*	309 *(187)*
Mid S-C	258 *(150)*	206 *(173)*
Low S-C	141 *(139)*	238 *(181)*
Combined	231 *(176)*	256 *(187)*